Revision number: Purchasing Agent: Debbie Gundersen

Item: ASPHALT MATERIAL (FOB PLANT PICKUP) FREDONIA, ARIZONA

Vendor:	45868G	Crown Asphalt Products Co. 215 South State Street Suite 650 Salt Lake City UT 84111-2319
Internet Homepage:		
Telephone:		(801) 537-1867
Fax number:		(801) 537-1863
Contact:		Brent Mackelprang
Email address:		psrc-bjm@expressweb.com
Brand/trade name:		Various
Price:		See Attached Price List
Terms:		Net 30
Effective dates:		03/15/00 through 03/15/02
Days required for delivery:		N/A
Price guarantee period:		Term of Contract
Minimum order:		N/A
Min shipment without charges:		N/A
Other conditions:		

THIS CONTRACT HAS BEEN RE-AWARDED.

Remittance Address: 215 South State #650, SLC UT 84111

This contract covers only those items listed in the price schedule. It is the responsibility of the agency to ensure that other items purchased are invoiced separately. State agencies will place orders directly with the vendor (creating a PG in Finet) and make payments for the same on a PV referencing the original PG. Agencies will return to the vendor any invoice which reflects incorrect pricing.

ASPHALT MATERIAL

FOB POINT OF MANUFACTURE - 1420 NORTH HIGHWAY 89A
FREDONIA, ARIZONA

DESCRIPTION	UNIT PRICE
1- SC ASPHALT MATERIAL, VARIOUS GRADES	$205.00/TON
2- MC ASPHALT MATERIAL, VARIOUS GRADES	$215.00/TON
3- SS OR CSS EMULSIFIED ASPHALT MATERIAL VARIOUS GRADES	$145.00/TON
4- CRS2A OR CRS2B EMULSIFIED ASPHALT MATERIAL, VARIOUS GRADES	$130.00/TON
5- LMCRS-2A ASPHALT MATERIAL	$175.00/TON
6- ASPHALT REJUVENATION - TYPE B, MODIFIED	$255.00/TON
7- ASPHALT REJUVENATION, TYPE C	$263.00/TON
8-ASPHALT REJUVENATION, TYPE D	$415.00/TON
9-FLOAT EMULSION - VARIOUS GRADES	$215.00/TON

Delete section 704 (1994 Metric Standard Specification Book) and replace with the following:

704.1.1 **Furnish asphalt material that is uniform** in appearance and consistency and shows no foaming when heated to the specified loading temperature.

704.1.2 **Do not supply shipments contaminated** with other asphalt types or grades than those specified.

704.1.3 Determine (by the Engineer) the grade of material to be used based on the supply source designated by the contractor when the bid proposal lists more than one grade of asphalt material to be used.

704.1.4 **Supply a vendor-prepared bill of lading** for each shipment of material showing the following information:

- **!** Type and grade of material
- **!** Type and amount of additives used, if applicable
- **!** Designation
- **!** Consignee's name
- **!** Date of Shipment
- **!** Railroad car or truck identification
- **!** Project number
- **!** Loading temperature
- **!** Net weight in metric units (or net liters corrected to 16 °C, when requested)
- **!** Specific gravity
- **!** Bill of lading number
- **!** Manufacturer of asphalt material

704.2.1 Performance Graded Asphalt Binder (PGAB)

704.2.1.1 Supply PGABs under the Approved Supplier Certification (ASC) system. As specified with following modifications:

- **Delete superscript (f) for all specified grades having design cold temperatures of -28 °C or colder.**

- **Add Direct Tension test for all specified grades having design cold temperatures of -28 °C or colder. Failure Strain, minimum of 1.3% @ 1.0 mm/min.**

- **Add Toughness and Tenacity test for all specified grades having algebraic differences of 90 °C or greater between the high and low design temperatures. Test specimens shall meet a minimum of 8.50 and 5.65 N m respectively.**

704.2.2 Asphaltic Cement

704.2.2.1 As specified with the following modifications:

- **Delete and replace ductility at 25 °C with ductility at 4 °C with values as detailed below.**

AC - 2.5	AC - 5	AC - 10	AC - 20
50+	25+	15+	5+

704.2.3 As specified for cationic and anionic emulsified asphalt. Supply under the Approved Supplier Certification System (ASC).

704.2.4 **Conform to the requirements of Cationic Emulsified Polymerized Asphalt (CRS-2R) listed in Table 704-1, Latex Modified Rapid Setting Emulsion (LMCRS-2) listed in Table 704-2, or Polymerized High Float Rapid Setting Emulsified Asphalt (HFRS-2P) listed in Table 704-3. Cationic Rapid Set Asphalt (CRS-2A, B) listed in Table 704.4.**

TABLE 704-1
CATIONIC EMULSIFIED POLYMERIZED ASPHALT (CRS-2R)

AASHTO TEST METHOD	MIN	MAX
TESTS ON EMULSION:	100	400
T-59 VISCOSITY SAYBOLT FUROL @60 C, SEC		
T-59 SETTLEMENT (A) 5 DAYS, %		5
T-59 STORAGE STABILITY TEST (B) 1 D, 24 H, %		
T-59 DEMUSLSIBILITY (C) 34 ML, 0.8% SODIUM DIOCTYL SULFOSUCINATE, %	40	
T-59 PARTICLE CHARGE TEST	POSITIVE	
T-59 SIEVE TEST, %		.010
DISTILLATION:		
OIL DISTILLATE, BY VOL OF EMULSION, % RESIDUE (D), %	68%	0

TESTS ON RESIDUE FROM DISTILLATION TEST:		
T-49 PENETRATION, 25 C, 100 G, 5 S	80	150
T-51 DUCTILITY, 4 C, 10 MM/MIN,MM	350	
TOUGHNESS, Nm (e)	8.50	
Tenacity, Nm (e)	5.67	
T-44 SOLUBILITY IN TRICHLOROETHYLENE, %	97.5	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.

(b) The 24-hour (1-day) storage stability test may be used instead of the five-day settlement test.

(c) The demulsibility test will be made within 30 days from date of shipment.

(d) Distillation will be determined by AASHTO T-59, oven-evaporated method.

(e) ASTM D5801.

The asphalt cement will be rubberized (polymerized) prior to emulsification.

Table 704-2
Latex Modified Rapid Setting Emulsion (LMCRS-2)

AASHTO Test Method	**Min.**	**Max.**
Tests on Emulsion:		
T-59 Viscosity Saybolt Furol @ 50 °C, sec	75	300
T-59 Settlement (a) 5 days, %		5
T-59 Storage Stability Test (b) 1 d, 24 h, %		1
T-59 Demulsibility (c) 35 ml, 0.8% sodium dioctyl Sulfosucinate, %	40	
T-59 Particle Charge Test	POSITIVE	
T-59 Sieve Test, %		0.3
Distillation:Oil distillate, by vol of emulsion, % Residue (d), %	65	0
Tests on Residue from Distillation Test:		
T-49 Penetration, 25 °C, 100 g, 5 s	40	200
Torsional Recovery, (e)	18	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.

(b) The 24-hour (1-day) storage stability test may be used instead of the five-day settlement test.

(c) The demulsibility test will be made within 30 days from date of shipment.

(d) Distillation will be determined by AASHTO T-59, oven-evaporated method.

(e) CA 332 (California Test Method)

Latex and asphalt shall be co-milled during the emulsification process.

Table 704-3
Polymerized High Float Rapid Setting Emulsified Asphalt (HFRS-2P)

AASHTO Test Method		**Min.**	**Max.**
Tests on Emulsion:			
T-59	Viscosity Saybolt Furol @ 50 °C, sec	50	450
T-59	Storage Stability Test (a) 1 d, 24 h, %		1
T-59	Demulsibility (b) 0.02 N Ca Cl_2, %	40	
T-59	Sieve Test, %		0.1
Distillation:			
	Oil distillate, by vol of emulsion, %		3
	Residue (c), %	65	
Tests on Residue from Distillation Test:			
T-49	Penetration, 25 °C, 100 g, 5 s	70	150
T-50	Float Test, 60 °C, sec	1200	
T-44	Solubility in trichloroethylene, %	97.5	
T-301	Elastic Recovery, 25 °C, %	58	

(a) The 24-hour (1-day) storage stability test may be used instead of the five-day settlement test.

(b) The demulsibility test will be made within 30 days from date of shipment.

(c) Distillation will be determined by AASHTO T-59, oven-evaporated method.

Table 704-4
Cationic Rapid Setting Emulsified Asphalt (CRS-2A,B)

AASHTO	Min	Max
Test Methods on Emulsion:		
T-59 Viscosity, Saybolt-Furol at 50 °C, s	140	400
T-59 Storage stability test, 24h, percent		1
T-59 Demulsibility, 35mL 0.8 percent Sodium Dioctyl Sulfosucinate, percent:	40	
T-59 Particle charge test	positive	positive
T-59 Sieve test, percent		0.10
Distillation:		
Oil distillate, by volume of emulsion, percent		0
T-59 Residue, percent	65	
The base asphalt cement used to manufacture the CRS2A,B, shall meet the requirements of Section 704.2.2 for AC-10 and AC-20, respectively.		

704.2.5 **As specified for slow curing cut-back asphalt (SC).**

704.2.6 As specified for medium curing cut-back asphalt (MC).

704.2.7 **As specified for rapid curing cut-back asphalt (RC).**

704.2.8 **Conform to the requirements of Asphalt Pavement Rejuvenating Agent Type B, listed in table 704-5; Type B Modified, listed in table 704-6; Type C, listed in table 704-7; and Type D, listed in table 704-8.**

Table 704-5
Type B Asphalt Pavement Rejuvenating Agent Concentrate

Property	Test Method	Limits
Viscosity @ 25 °C SFS	AASHTO T-59	25-150
Residue, % W	AASHTO T-59 (Mod) (1)	62 Min.
Sieve Test, % W	AASHTO T-59	0.10 Max.
5 day settlement	AASHTO T-59	5.0 Max.
Particle Charge	AASHTO T-59	Positive
Pumping Stability (2)		Pass
Tests on Residue from Distillation:		
Viscosity @ 60 °C, mm^2/s	AASHTO T-201	2500-7500
Solubility in 1,1,1 Trichloroethylene	AASHTO T-44	98 Min.
Flash Point, COC	ASTM D-92	204 °C, Min.
Asphaltenes, %W	ASTM D-2007	15 Max.
Saturates, %W	ASTM D-2007	30 Max.
Aromatics, %W	ASTM D-2007	25 Min.
Polar Compounds, %W	ASTM D-2007	25 Min.

(1) AASHTO T-59 EVAPORATION TEST FOR SAMPLE RESIDUE IS MODIFIED BY HEATING 50 GRAM SAMPLE TO 149 °C UNTIL FOAMING CEASES, THEN COOLING IMMEDIATELY AND CALCULATING RESULTS.
(2) PUMPING STABILITY IS TESTED BY PUMPING 475 ml OF TYPE B DILUTED 1 PART CONCENTRATE TO 1 PART WATER, AT 25 °C, THROUGH A 1/4 INCH GEAR PUMP OPERATING AT 1750 rpm FOR 10 MINUTES WITH NO SIGNIFICANT SEPARATION OR COAGULATION.

Type B shall be an emulsion of lube oil and/or lube oil extract blended with petroleum asphalt

Table 704-6
Type B Modified Asphalt Pavement Rejuvenating Agent
Concentrate

Property	Test Method	Limits
Viscosity @ 25 °C SFS	AASHTO T-59	50-200
Residue by Distillation or Evaporation [1], %W	AASHTO T-59	62 Min.
Sieve Test, %W	AASHTO T-59	0.20 Max.
5 day settlement	AASHTO T-59	5.0 Max.
Particle Charge	AASHTO T-59	Positive
Pumping Stability[2]	AASHTO T-59	Pass
Tests on Residue from Distillation or Evaporation :		
Viscosity [3] @ 135 °C, mm^2/sec	ASTM D-4402	150-300
Penetration @ 25 °C, dmm	AASHTO T-49	180 Min.
Solubility in 1,1,1 Trichloroethylene,%	AASHTO T-44	98 Min.
Flash Point, COC,°C	AASHTO T-48	204 Min.
Asphaltenes,%W	ASTM D-2007	20-40.
Saturates, %W	ASTM D-2007	20 Max.
Polar Compounds, %W	ASTM D-2007	25 Min.
Aromatics, %W	ASTM D-2007	20 Min.
PC/S Ratio	ASTM D-2007	1.5 Min

[1]AASHTO T-59 Evaporation Test for percent residue is modified by heating 50 g sample to 149 °C until foaming ceases, then cooling immediately and calculating results.

[2]Pumping stability is tested by pumping 475 ml of Type B Modified diluted 1 part concentrate to 1 part water, at 25 °C, through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes . The resultant pumped material shall show no significant separation or coagulation..

[3]Brookfield Thermocel Apparatus- LV model at 6 rpm with a #28 spindle at 2-98 torque.

As required by the Asphalt Emulsion Quality Management System (Materials Manual part 8-208), the supplier shall certify that the base stock contains a minimum of 15% by weight of Gilsonite Ore. The HCL precipitation method shall be used as a qualitative test to detect the presence of Gilsonite.

Table 704-7
Type C Asphalt Pavement Rejuvenating Agent

Property	Test Method	Limits
Viscosity @ 25 °C, SFS	AASHTO T-59	10-100
Sieve Test[2]		0.1 Max.
Particle Charge Test	AASHTO T-59	Positive
p^H (May be used if particle charge test is inconclusive)		2.0 -7.0
Pumping Stability [3]		Pass
5 day Settlement Test, %W	AASHTO T-59	5.0 Max.
Residue[1] , %W (Type C supplied ready to use 1:1 or 2:1	AASHTO T-59	30 Min. 1:1 40 Min 2:1
Tests on Residue from Distillation:		
Viscosity @ 135 °C, mm^2/s	AASHTO T-201	475-1500
Flash Point, COC	AASHTO T-48	232 °C, min
Solubility in 1,1,1 Tricloroethylene	AASHTO T-44	97.5 Min.
RTFO mass loss, %W	AASHTO T-240	2.5 Max.
Specific Gravity	AASHTO T-228	0.98 Min.
Asphaltenes, %W	ASTM D2007	25 Min. 45 Max.
Polar Compounds, %W	ASTM D2007	30 Min.
Aromatics, %W	ASTM D2007	15 Min.
Saturates, %W	ASTM D2007	10 Max.

[1]AASHTO T-59 modified evaporation test for percent residue is made by heating 50 g sample to 149 °C until foaming ceases, then cooling immediately and calculating results.

[2]Test method identical to AASHTO T-59 except that distilled water shall be used in place of 2% sodium oleate solution.

[3]Pumping stability is tested by pumping 475 ml of Type C diluted 1 part concentrate to 1 part water, at 25 °C, through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes . The resultant pumped material shall show no significant separation or coagulation..

As required by the Asphalt Emulsion Quality Management System (Materials Manual part 8-208), the supplier shall certify that the base stock contains a minimum of 10% by weight of Gilsonite Ore. The HCL precipitation method shall be used as a qualitative test to detect the presence of Gilsonite.

Table 704-8
Type D Asphalt Pavement Rejuvenating Agent

Property	Test Method	Limits
Viscosity @ 25 °C, SFS	AASHTO T-59	30-90
Residue[1] % W	AASHTO T-59	65%
pH		2.0 -5.0
Sieve, % W	AASHTO T-59	0.1% MAX
Tests on Residue from Distillation[1]		
Viscosity, at 60 °C, cm^2/sec	AASHTO T-201	300-1200
Viscosity, at 135 °C, mm^2/sec	AASHTO T-201	300 MIN
Modified Torsional Recovery[2]	CA 332(Mod)	40% MIN
Toughness @ 25 °C, N.m	ASTM D-5801	0.9 MIN
Tenacity @ 25 °C, N.m	ASTM D-5801	0.6 MIN
Asphaltenes, %W	ASTM D-2007	16 MIN
Saturates, %W	ASTM D-2007	20 MAX

[1] California test method #331 for recovery of residue.
[2] Torsional recovery measurement to include first 30 seconds.

704.2.9 Hot-Pour Crack Sealant for Bituminous Concrete.

704.2.9.1 Combine a homogenous blend of materials to produce a sealant meeting properties and tests as listed in Table 704-9.

704.2.9.2 Packaging and Marking: Supply sealant pre-blended, pre-reacted, and pre-packaged in lined boxes weighing no more than 13.6 kg. Use a dissolvable lining that will completely melt and become part of the sealant upon subsequent re-melting. Deliver the sealant in the manufacturer's original sealed container. Clearly mark each container with the manufacturer's name, trade name of sealant, batch or lot number, and recommended safe heating and application temperatures.

Table 704-9
Hot-Pour bituminous Concrete Crack Sealant

Application Properties:		
Workability:	Pour readily and penetrate 6.35 mm and wider cracks for the entire application temperature range recommended by the manufacturer.	
Curing:	No tracking caused by normal traffic after 45 minutes from application.	
Asphalt Compatibility: ASTM D5329, Sec 14	No failure in adhesion, or formation of an oily ooze at the interface between the sealant and the bituminous concrete or softening or other harmful effects on the bituminous concrete.	
Material Handling:	Follow the Manufacturer's safe heating and application temperatures.	
Test Method:	Minimum	Maximum
Flexibility [1]		No cracks
AASHTO T-51 Ductility Modified, 1cm/min @ 4 °C	30 cm	
AASHTO T-300 [2] Force-Ductility		17.79 N
ASTM D-5329 Flow 60 °C, 5 hrs, 75 ° angle		3 mm
ASTM D-3405[3] Tensile-Adhesion Modified	300%	
AASHTO T-228 Specific Gravity @15.6 °C		1.140
ASTM D-5329 Cone Penetration 25 °C, 150 g, 5 sec		90 dmm
ASTM D-5329 Resilience 25 °C, 20 sec.	30	
ASTM D-4402 Viscosity @ 193.3 °C, Pa.s SC4-27 spindle, 20 rpm		2.5
ASTM D-5329 Bond as per ASTM D-1190 section 6.4		pass

[1]Melt a sample of the sealant in accordance to ASTM D5167, Prepare a specimen (3.175 X 25.4 X 152.4 mm). Condition at 25 ±2 °C for 1 hr.±5 min. Further condition at -27 ±2 °C for 3 hr. ±5 min.. Immediately bend the conditioned specimen 90 ° over a 28.6 mm diameter steel mandrel conditioned at -27 ± 2 °C. Accomplish bending within 2 seconds.

[2]Maximum of 17.79 N during the specified elongation of 30 cm @ 1 cm/min @ 4 °C.

[3]Use ASTM D3405, section 6.4.1. Delete bond and substitute tensile-adhesion test in accordance to D5329.

704.2.10 Price adjustments for asphaltic cement and liquid asphalt (chip-seal emulsions and/or cut-backs).

704.2.10.1 Standard department procedure governs price adjustments made where asphalt material does not conform to the specifications.

! If the price adjustment exceeds 30 percent, the Engineer may order the removal of any or all of the defective asphalt material.

! The pay factor for such material will be 0.50 when allowed to remain in place.

704.2.11 Price adjustments for Performance Graded Asphalt Binder (PGAB)

704.2.11.1 Standard departmental PGAB management plan governs price reductions or removal of material where the binder does not conform to the specifications.

704.2.11.2 All suppliers of asphalt and emulsions and rejuvenating agents (chip seal emulsion are excluded) are required to be an approved, certified supplier as per Materials Manual 8-208 “Asphalt Emulsion Quality Management Plan”.

704.2.11.3 For acceptance testing please refer to the latest edition of “Minimum Sampling and Testing Manual”.

REPORTS:

The contractor will submit yearly reports to the State Purchasing Agent (Debbie Gundersen) showing quantities and dollar volume of purchases by each agency and political subdivision. This report will be due by 4/15/00.

FINET COMMODITY CODE(S): **FOR AGENCY USE ONLY**

74512000000 - ASPHALT, OIL